



INL Laboratory Fellows from left to right, Herschel Smartt, Paul Meakin, David Petti, Dieter Wolf, William Apel, Steve Herring, James Delmore and Terry Todd.

INL Fellows program honors career of recognized performance

By Keith Arterburn, *INL Communications*

Six nationally and internationally known researchers at Idaho National Laboratory have achieved “career capstone recognition” as Laboratory Fellows at INL for “outstanding contributions to the scientific and engineering community.”

These elite researchers are William Apel, James Delmore, Paul Meakin, David Petti, Herschel Smartt and Dieter Wolf. New Laboratory Fellows are added periodically as INL researchers achieve eminence within their fields of expertise.

Emphasizing their key roles as mentors for junior researchers and as key advisers to management, John Grossenbacher said of INL Laboratory Fellows, “These are the scientific leaders of the laboratory who have achieved respected stature in the national and international research community. They are viewed as authorities in their areas of expertise. Their judgment is critical to developing business and technical strategies.”

Candidates for Laboratory Fellows are recommended by management to the Fellows Promotion Committee, which reviews detailed promotion packages that include individual contributions, professional achievements, leadership positions held in technical organizations, letters of recommendation and an evaluation of that person’s overall scientific and technical impact. Selection as an INL Laboratory Fellow equates to being named to an endowed chair at a major university, an elite member of a professional society, or a member of a national academy.

Harold Blackman, Laboratory Integration director, said, “The achievements and technical reputations of our Laboratory Fellows are integral to INL success. They help gain peer respect for INL, enlarge our customer base, and enable us to achieve our strategic goals.” Underscoring their value to the nation’s future, he added “our Laboratory Fellows inspire younger researchers and attract those who will be the next-generation work force.”

Laboratory Fellow Qualifications

The professional knowledge requirement is extensive, including an advanced degree, national and international recognition in a specialized field, highly productive project and program planning and execution, and professional licenses or other required special qualifications. The engineering or scientific achievement qualification includes a detailed listing of achievements, publishing highlights in peer-reviewed publications, technology development and deployment highlights, and detailed summary of solving technical scientific or engineering problems. Finally, the recommendation must include a summary of the individual’s impact on laboratory missions, specific contributions to mission achievement and professional awards and honors.

Current Laboratory Fellows – A Quick Look

William Apel earned a Ph.D. in microbiology at Ohio State University and chairs the Laboratory Fellows group. Internationally recognized for his distinguished biological research and its application, he has won three R&D 100 awards and a NOVA award for technical excellence. Selected as the INL Inventor of the Year for 2007, he has authored more than 80 peer-reviewed technical publications and delivered more than 100 presentations at international conferences. He holds five U.S. patents and has an additional six patent applications pending. He also spent 12 years as a scientist and manager in product development and corporate R&D at the Procter & Gamble Company. His current research areas include microbially catalyzed metal and radionuclide transformations, and extremophile microbiology.

James Delmore holds a Ph.D. in physical chemistry from the University of Missouri and has worked at INL since 1966. He spent many years with programs measuring fission yields, performing destructive analyses of many types of nuclear fuel and working in various areas of nuclear nonproliferation. He has spent the past 25 years conducting research in ion formation mechanisms, new methods for chemical and isotopic analysis, new concepts for secondary ion mass spectrometry and new concepts for chemical instrumentation and ion optics. His work has earned three R&D 100 awards, while leading teams that designed, built and successfully operated three major types of mass spectrometers. Recently, he reactivated his research in nuclear nonproliferation, writing proposals for new programs and mentoring younger scientists. The resulting activities

are now doing well with younger scientists who are assuming increased responsibility.

Paul Meakin holds a Ph.D. in physical chemistry from the University of California at Santa Barbara. He conducted research at the University of Oslo, Norway, and assessed the effect of chlorofluorocarbons on stratospheric ozone reduction and global warming for DuPont. He is an expert in Monte Carlo modeling, fractal geometry, colloid science and statistical physics. At INL, he has been the modeling lead for subsurface science studies, and has worked to develop strategies for increasing the level of national support for subsurface science. Author of more than 300 refereed papers in more than 30 leading journals, from 1981-1997 he was ranked 79th for citations to physics journals. A Fellow of the American Physical Society and a Member of the Norwegian Academy of Science and Letters, he received the Gunnar Randers Research Prize for 2007 from Norway's King Harald V in April 2007.

David Petti earned his Sc.D. from Massachusetts Institute of Technology and has conducted extensive research into reactor fuel conditions during severe accidents such as Three Mile Island. He led INL's Fusion Safety Program for over a decade and acts as the U.S. DOE's technical safety consultant to the International Thermonuclear Experimental Reactor. Most recently, he served as the technical director for an INL research team that used reverse engineering methods to improve the performance of coated-particle nuclear fuel for the Next Generation Nuclear Plant (NGNP) to reach a burnup of 9 percent without any fuel failure. This follows test failures that occurred in the early 1990s. Success in this effort is most important in closing the loop for the future high-temperature gas reactor fuels community. He is currently the R&D technical director of the NGNP Project. He has authored 72 -peer-reviewed publications and 29 technical papers, and delivered more than a dozen presentations to international conferences.

Herschel Smartt holds a Ph.D. in mechanical engineering from the University of Texas at Austin and has expertise in manufacturing, materials processing, machine design and intelligent machines. Working at INL since 1978, he has excelled in research on welding, welding automation, concurrent weld inspection, and machine sensing, diagnostics and control. He received the A.F. Davis Silver Medal Award twice for machine design, the A.W.S. Adams Award and the INL Lifetime Achievement Award for Inventorship in 2003. Author of a large number of publications, he is an editorial board member for the International Journal of Science and Technology of Welding and Joining, and a key reader for the American Welding Society's Welding Journal in automation, sensing and control. A leader in artificial neural networks research, he has worked to establish strong programs in weld process research and weld sensing and control at the Trends in Welding Research Conference series.

Dieter Wolf holds a doctorate in materials physics from the Max Planck Institute for Metals Research in Germany. Prior to joining INL, Dr. Wolf held positions at Argonne National Laboratory in the Materials Science Division and at the University of Utah in the Department of Physics. His research has focused on theoretical and computational materials science and he has authored more than 200 journal papers. He is a Fellow of the American Physical Society and has been recognized with several awards, including the DOE Office of Basic Energy Sciences Award for Sustained Outstanding Research and a Max Planck Research Award. At INL, he is leading research on atomistically informed mesoscale simulations – and developing a better understanding of the processes that control the degradation of materials under high temperatures and intense radiation conditions. He is building a research group at INL that is laying the foundation for the first-principles prediction of material properties, and is also strengthening collaborations with other laboratories.

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